UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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EXAMINER
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ART UNIT	PAPER NUMBER
3639	

DATE MAILED: 05/09/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	09/741,956	LEE ET AL.
	Examiner	**Art Unit**	
	Akiba K. Robinson-Boyce	3639	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>06 April 2006</u>.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-4 and 6-11</u> is/are pending in the application.

   4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-4 and 6-11</u> is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

   a)☐ All   b)☐ Some * c)☐ None of:

   1.☐ Certified copies of the priority documents have been received.

   2.☐ Certified copies of the priority documents have been received in Application No. _____.

   3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)

2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date <u>042406,011706</u>.

4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.

5) ☐ Notice of Informal Patent Application (PTO-152)

6) ☐ Other: _____.

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1.   A request for continued examination under 37 CFR 1.114, including the fee set

forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this

application is eligible for continued examination under 37 CFR 1.114, and the fee set

forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action

has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 4/6/06

has been entered.

Status of Claims

2.   Due to communications filed 4/6/06, the following is a non-final office action.

Claims 1-3 have been amended. Claim 5 has been cancelled. Claims 10 and 11 have

been added. Claims 1-4 and 6-11 are pending in this application and have been

examined on the merits.

Claim Rejections - 35 USC § 103

3.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set
> forth in section 102 of this title, if the differences between the subject matter sought to be patented and
> the prior art are such that the subject matter as a whole would have been obvious at the time the
> invention was made to a person having ordinary skill in the art to which said subject matter pertains.
> Patentability shall not be negatived by the manner in which the invention was made.

4.   Claims 1, 6, are rejected under 35 U.S.C. 103(a) as being unpatentable over

Ouimet et al (US 6,078,893), and further in view of Garg, (US 6,044,357)

As per claim 1 Ouimet et al discloses:

Creating, using the computer system, a plurality of demand groups, wherein each

demand group is a set of at least one product, and wherein at least one of the demand

groups is a set of at least two products, (col. 5, lines 45-64, [shows demand is described

for each item in a given group where the product is represented by the item, in this

case, one of the demand groups being a set of at least two products is inherent since

Ouimet et al discloses that "each item in a given group" implies that there are more than

one items in a group since the sales of "one" item can depend upon the parameters of

all the other items]);

Creating, using the computer system, a demand group sales model as a function

of price wherein said demand group sales model models sales for each demand group,

, (col. 6, lines 5-11, [shows a one-dimensional demand model which scales the amount

of sales, in this case, the variables are simply the prices $\{p\}$, and the demand

parameters q_i scales the amount of sales and g_i, which describes the sensitivity of the

item to price]),

further wherein said demand group sales model provides a single model for

modeling sales of all of the products in each said demand group, (Col. 6, lines 12-15,

shows more complicated models where a demand model which the is a nonlinear,

cross-correlation between the variables of different items, which represent products);

Creating, using the computer system, said product sales model by combining

said demand group sales model and said internal market share model, wherein said

product sales model models sales for individual products, (Col. 6, lines 63-64, where the

user selects a figure-of-merit function to be used to tune the demand model to the sales

history, thereby creating a resulting demand model that conforms to the portions of the

sales history data that shows a strong trend, and conform to the external market

information when the corresponding portions of the sales history data show noise as

shown in the abstract, lines 13-17, w/ Col. 6, lines 12-15, shows a demand model

which the is a nonlinear, cross-correlation between the variables of different items,

which represent individual products);

Ouimet et al does not specifically disclose wherein each demand group is a

group of highly substitutable products, but does disclose defining a new market model

that represents and describes how the demand parameters are expected to vary, where

the demand parameters relate to the products in each demand group in col. 6, lines 17-

25.

However, Garg discloses:

wherein each demand group is a group of highly substitutable products, (Col. 13,

line 65, shows inventory maintenance is implemented for products which means that

these products are replaceable through inventory stock, w/ Col. 14, lines 55-58 and col.

15 lines 17-18 and lines 24-26, show the selection of a first marketing mix, a selection of

another marketing mix, and then the identification of which marketing mix generates the

largest profit/loss, in this case, one marketing mix for products can be substituted for

another marketing mix for the highest profit or loss outcome). Garg discloses this

limitation in an analogous art for the purpose of showing that products within marketing

mixes are interchangeable.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention for each demand group to be a group of highly substitutable products with the motivation of having the ability to replace the products when needed.

Creating, using the computer system, an internal market share model wherein said internal market share model determines the fraction of the internal sales of each demand group comprised by each product, however does disclose defining a new market model that represents and describes how the demand parameters are expected to vary, where the demand parameters relate to the products in each demand group in col. 6, lines 17-25.

However, Garg discloses:

creating, using the computer system, an internal a market share model wherein said internal market share model determines the fraction of the internal sales of each demand group comprised by each product,, (col. 5, lines 38-41, [market share model to characterize the demand distribution for each brand, in this case, the group is represented by the brand, and the demand distribution represents a different demand resulting from sales for each product. This demand distribution will therefore vary for each brand, and therefore represents fraction of the sales]. In addition, the sales are internal since the demand groups are by a particular brand, which means that sales do not have to go to an external source for another brand). Garg discloses this limitation in an analogous art for the purpose of showing that market share models are used to set base stock levels for inventory management.

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention to create a market share model for each product in each demand

group with the motivation of providing a representation of how the demand distribution is

represented through products.

As per claim 6, Ouimet et al discloses:

Defining an equivalizing factor for the products of each demand group, (Col. 4,

line 66-Col. 5, line 6).

5.   Claims 3-4, and 9 are rejected under 35 U.S.C. 103(a) as being unpatentable

over Chavez et al, (US 6,684,193), and further in view of Ouimet et al, (US 6,078,893).

As per claim 3, Chavez et al discloses:

Computer program instructions which, when executed by a computer, cause the

computer to generate an econometric engine for modeling sales as a function of price,

(Col. 7, lines 5-10 and lines 58-62, shows using the economical model to balance the

amount of money brought in from sales against the costs).

A imputed variable generator for generating imputed econometric variables; (col.

8, lines 22-27, [consumption distribution imputed {inferred} from components]);

A coefficient estimator coupled to the imputed variable generator, and wherein

imputed variables generated by the variable generator are used by the coefficient

estimator to create a demand group sales model as a function of price, wherein said

demand group sales model provides a single model for modeling sales of all of the

products in each said demand group, an internal market share model, and a combined

product sales model, wherein said product sales model models sales for individual

products, [col. 15, lines 6-14, [shows an example of how the revenue coefficient is incorporated into modeling the value function in a manner to account for interactive effects between the refinements and the resources that comprise that particular model], w/ (Col. 6, lines 12-15, shows more complicated models where a demand model which the is a nonlinear, cross-correlation between the variables of different items, which represent individual products).

Chavez et al does not specifically disclose the terms "variable generator" or "coefficient estimator", however, does disclose an engine (col. 18, lines 23-27) that produces the same results, and therefore represents the econometric engine that contains the "variable generator" and the "coefficient estimator". Therefore, the "variable generator" and the "coefficient estimator" are inherent with Chavez et al.

Chavez et al fails to disclose including a base price variable and a base volume Variable, wherein said base volume variable represents the volume of product units sold in the absence of discount pricing or other promotional effects/an imputed base price variable and an imputed base volume variable, but does disclose the generation of a model for the demand of a product in col. 53-63, and does disclose that the base parameter's values would only depend on the sales level and price in Col. 10, line 60-67.

However, Ouimet et al discloses:

including a base price variable and a base volume variable/an imputed base price variable and an imputed base volume variable wherein said base volume variable represents the volume of product units sold in the absence of discount pricing or other

promotional effects, (Col. 10, lines 60-65, where the base parameters in the demand model are the amount of sales and price, here the amount of sales is the volume and the price is the price, w/ col. 5, lines 64-67, shows that variables that affect the demand can include promotional activity). Ouimet et al discloses this limitation in an analogous art for the purpose of disclosing a one-dimensional demand model.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention to include a base price variable and a base volume variable with the motivation of having variables available to formulate a base demand model.

As per claim 4, Chavez et al discloses:

Wherein the imputed variable generator receives raw data, and cleans the data, (Col. 20, lines 24-32, [filtering and then identifying variables]).

As per claim 9, Ouimet et al does not specifically disclose wherein said raw data includes missing or incomplete data sets, (Col. 11, lines 36-41, imperfect information). Garg discloses this limitation in an analogous art for the purpose of showing that firms do not usually know the exact strategy their competitors will adopt.

It would have been obvious to one of ordinary skill in the art at the time of the applicant's invention for raw data to include missing or incomplete data with the motivation of realistically showing the details of raw data.

6.   Claims 2, 7-11 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ouimet et al (US 6,078,893) as applied to claim 1 above, and further in view of Garg, (US 6,044,357), and further in view of Chavez et al (US 6,684,193).

As per claim 2, Ouimet discloses:

wherein said raw data includes product parameter data which is missing or

incomplete, wherein said imputed variables are used to estimate said missing or

incomplete data, (Col. 11, lines 58-67, provides a way to correct for errors by a tuning

process where the system reduces the number of tunable parameters, thus allowing for

a way to minimize the influence of random noise in the data, in this case the inclusion of

noise represents the production of incomplete data since the noise interferes with full

production of data, and the tuning represents the process used for estimating the

incomplete data).

Both Ouimet et al and Garg fail to disclose collecting, using the computer system,

raw data; and generating, using the computer system, imputed variables from the raw

data, wherein the imputed variables are used to create the product sales model, but

Ouimet et al does disclose generating a sales model in Col. 6,lines 5-11.

However, Chavez et al discloses:

collecting, using the computer system, raw data; and generating, using the

computer system, imputed variables from the raw data, further wherein the imputed

variables are used to create the product sales model, (Col. 20, lines 24-32, [filtering and

then identifying variables], w/ col. 6, lines 5-11, [shows a one-dimensional demand

model which scales the amount of product sales, in this case, the variables are simply

the prices {p},and the demand parameters qi scales the amount of sales and gi, which

describes the sensitivity of the item to price according to product sales]). Chavez et al

discloses this limitation in an analogous art for the purpose of identifying variables that

go furthest in "explaining" the uncertainty in the particular variable of interest.

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention to collecting, using the computer system, raw data; and

generating, using the computer system, imputed variables from the raw data, wherein

the imputed variables are used to create the product sales model with the motivation of

producing a sales model with unused product data.

As per claim 7, Ouimet et al discloses:

including a base price variable and a base volume variable/an imputed base

price variable and an imputed base volume variable wherein said base volume variable

represents the volume of product units sold in the absence of discount pricing or other

promotional effects, (Col. 10, lines 60-65, where the base parameters in the demand

model are the amount of sales and price, here the amount of sales is the volume and

the price is the price, w/ col. 5, lines 64-67, shows that variables that affect the demand

can include promotional activity).

As per claim 8, Ouimet et al discloses:

Generating a moving average for base price; and generating a moving average

for base volume, (Col. 6, lines 51-53, shows how values stray fro those which are

expected based on the average margin for an item).

As per claim 10, Ouimet et al discloses:

defining an equivalent price for each said product using said equivalizing factor;

defining equivalent units sold for each said product using said equivalizing factor;

defining an equivalent base price for each said product using said equivalizing factor;

defining equivalent base units sold for each said product using said equivalizing factor,

(col. 5, lines 1-12, shows that the figure of merit function entered by the user, which depends upon a selected demand model is equivalent to a standard function (x squared), and gives an example of the sales history for a particular item as it relates to the selected model, therefore any function entered by the user will have an equivalent x squared function associated with it, w/col. 6, lines 5-11, shows that price is a constant equal to the average price of the item);

creating a demand group equivalent sales model based on said equivalent price and said equivalent units sold, see above paragraph, col. 5, lines 1-12, demand model);

creating, using the computer system, an equivalent product sales model by combining said demand group equivalent sales model and said equivalent internal market share model, wherein said equivalent product sales model models equivalent sales for individual products, (Col. 6, lines 63-64, where the user selects a figure-of-merit function to be used to tune the demand model to the sales history, thereby creating a resulting demand model that conforms to the portions of the sales history data that shows a strong trend, and conform to the external market information when the corresponding portions of the sales history data show noise as shown in the abstract, lines 13-17, w/ Col. 6, lines 12-15, shows a demand model which the is a nonlinear, cross-correlation between the variables of different items, which represent individual products);

Ouimet et al does not disclose creating an equivalent internal market share model based on said equivalent price and said equivalent units sold, however does disclose defining a new market model that represents and describes how the demand

parameters are expected to vary, where the demand parameters relate to the products

in each demand group in col. 6, lines 17-25.

However, Garg discloses:

creating, using the computer system, an internal a market share model wherein

said internal market share model determines the fraction of the internal sales of each

demand group comprised by each product,, (col. 5, lines 38-41, [market share model to

characterize the demand distribution for each brand, in this case, the group is

represented by the brand, and the demand distribution represents a different demand

resulting from sales for each product. This demand distribution will therefore vary for

each brand, and therefore represents fraction of the sales]. In addition, the sales are

internal since the demand groups are by a particular brand, which means that sales do

not have to go to an external source for another brand). Garg discloses this limitation in

an analogous art for the purpose of showing that market share models are used to set

base stock levels for inventory management.

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention to create a market share model for each product in each demand

group with the motivation of providing a representation of how the demand distribution is

represented through products.

Neither Ouimet et al nor Garg disclose indexing said demand group equivalent

sales model by divided said demand group equivalent sales by baseline demand group

equivalent sales, but Ouimet et al does disclose defining a new market model that

represents and describes how the demand parameters are expected to vary, where the

demand parameters relate to the products in each demand group in col. 6, lines 17-25.

However, Chavez et al discloses:

indexing said demand group equivalent sales model by divided said demand

group equivalent sales by baseline demand group equivalent sales, (Col. 10, lines 7-25,

shows that the baseline demand is considered when dealing with modeled parameters).

Chavez et al discloses this limitation in analogous art for the purpose of showing that

baseline demand serves as a part of modeling demand.

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention to index the demand group equivalent sales model by divided said

demand group equivalent sales by baseline demand group equivalent sales with the

motivation of showing a demand model based on baseline demand.

As per claim 11, discloses:

and wherein said econometric engine utilizes a mixed-model framework wherein

data across all stores and products for a selected demand group is utilized

simultaneously, (abstract, lines 13-17, w/ Col. 6, lines 12-15, shows a demand model

which the is a nonlinear, cross-correlation between the variables of different items,

which represent individual products).

The following is obvious with Chavez since Chavez already discloses an imputed

variable generator for generating imputed econometric variables in col. 8, lines 22-27,

as discussed above with respect to claim 3, and an imputed consumer stockpiling

variable, an imputed day of the week variable, an imputed seasonality variable, an

imputed promotional variable, and an imputed cross-elasticity variable are all a part of

econometric parameters, and are all commonly applied in the application of economics

in the study of problems, the analysis of data, and the development and testing of

theories and models:

said imputed variable generator generates additional econometric variables

including an imputed consumer stockpiling variable, an imputed day of the week

variable, an imputed seasonality variable, an imputed promotional variable, and an

imputed cross-elasticity variable.

It would have been obvious to one of ordinary skill in the art at the time of the

applicant's invention for said imputed variable generator generates additional

econometric variables including an imputed consumer stockpiling variable, an imputed

day of the week variable, an imputed seasonality variable, an imputed promotional

variable, and an imputed cross-elasticity variable with them motivation of providing well

known economic parameters for modeling demand.

Response to Arguments

7.   Applicant's arguments filed 4/6/06 have been fully considered but they are not

persuasive.

Applicant has amended claims 1, 3, to more distinctly distinguish the instant

invention from prior art cited. However, these claims are still rejected as discussed

above.

In addition, as per claim 1, the applicant argues that Ouimet '893 does not teach nor suggest creating a demand group sales model, and does not disclose any structure which is capable of modeling sales for a group of highly substitutable products. However, as described in the rejection above, the demand group sales model is disclosed in col. 6, lines 5-11. Here, a one-dimensional demand model which scales the amount of sales is shown. In addition, Ouimet '893 discloses means for combining said demand model and market model to form an effective figure-of-merit function model in col. 16, lines 45-46.

With respect to claim 1, the applicant also argues that neither Ouimet '893 nor Garg '357 disclose the internal market share model disclosed by the instant invention. However, as discussed above in the rejection, a market share model to characterize the demand distribution for each brand is disclosed in col. 5, lines 38-41. In this case, the group is represented by the brand, and the demand distribution represents a different demand resulting from sales for each product. This demand distribution will therefore vary for each brand, and therefore represents fraction of the sales. These sales are internal since the demand groups are by a particular brand, which means that sales do not have to go to an external source for another brand.

As per claim 3, the applicant argues that neither Chavez et al nor Ouimet et al teach nor suggest providing imputed variables generated by the variable generator and used by the coefficient estimator to generate sales models. However, Chavez discloses the consumption distribution imputed {inferred} from components in col. 8, lines 22-27,

which represents the imputed variables, and in this case, these variables are used to model elements concerning the distribution of products.

In addition, applicant argues that neither Chavez et al nor Ouimet et al suggest the imputation steps which solve the problem of generating econometric variables from missing or incomplete data sets. This definition was amended into claim 2, and as shown in the rejection, as being disclosed by Ouimet et al in Col. 11, lines 58-67.

In addition, with regard to claim 2, this claim is rejected for reasons similar to those discussed above with respect to claim 1 and 3. Claim 2 is therefore rejected for the same reasons as disclosed above with respect to claims 1 and 3. Claim 2 has also been amended and is rejected as discussed above in the rejection.

Conclusion

8.   Any inquiry concerning this communication or earlier communications from the examiner should be directed to Akiba K Robinson-Boyce whose telephone number is 571-272-6734. The examiner can normally be reached on Monday-Friday 8:30am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Hayes can be reached on 571-272-6708. The fax phone numbers for the organization where this application or proceeding is assigned are 703-746-7238 [After final communications, labeled "Box AF"], 703-746-7239 [Official Communications], and 703-746-7150 [Informal/Draft Communications, labeled "PROPOSED" or "DRAFT"].

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

A. R. B.
May 3, 2006